

Combination of Acids and Bases

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1060. It should ever be remembered that the chemical theory sets out with a power the existence of which is pre-proved, and then follows its variations, rarely assuming anything which is not supported by some corresponding simple chemical fact. The contact theory sets out with an assumption, to which it adds others as the cases require, until at last the contact force, instead of being the firm unchangeable thing at first supposed by Volta, is as variable as chemical force itself.

1061. Were it otherwise than it is, and were the contact theory true, then, as it appears to me, the equality of cause and effect must be denied (1057). Then would the perpetual motion also be true; and it would not be at all difficult, upon the first given case of an electric current by contact alone, to produce an electro-magnetic arrangement, which, as to its principle, would go on producing mechanical effects for ever.

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NOTE

1062. In a former part (660, etc.) I have said that I do not think any part of the electricity of the voltaic pile is due to the combination of the oxide of zinc with the sulphuric acid used, and that I agreed so far with Sir Humphry Davy in thinking that acids and alkalies did not in combining evolve electricity in large quantity when they were not parts of electrolytes.

This I would correct; for I think that Becquerel's pile is a perfect proof that when acid and alkali combine an electric current is produced.

I perceive that Dr. Mohr of Coblenz appears to have shown that it is only nitric acid which amongst acids can in combining with alkalies produce an electric current.

For myself, I had made exception of the hydracids (664) on theoretical grounds. I had also admitted that oxyacids when in solution might in such cases produce small currents of electricity (663 and *note*)} and Jacobi says that in Becquerel's improved acid and alkaline pile, it is not above a thirtieth part of the whole power which appears as current. But I now wish to say, that though in the voltaic battery, dependent for its power on the oxidisement of zinc, I do not think that the

¹ *Bibliothèque Universelle*, 1838, xiv. 129, 171. *Comptes Rendus*, i. p. 455.
Annales de Chimie, 1827, xxxv. 122.
² *Philosophical Magazine*, 1838, xiii. p. 382; or
Poggendorf's *Annalen*,
xlii. p. 76.